# Summit X250e Series

*Summit® X250e series 24- or 48-port Fast Ethernet stackable switches provide compelling high-performance edge solutions with the revolutionary modular operating system, ExtremeXOS®.*

Summit X250e series switches are based on Extreme Networks® revolutionary ExtremeXOS core-class operating system. ExtremeXOS is a highly resilient, modular operating system that helps provide continuous uptime, manageability and operational efficiency at an affordable price.

Summit X250e provides high availability and performance with its advanced traffic management capabilities. Summit X250e supports the large-scale rollout of a converged network with devices such as IP telephones, wireless access points and other devices that require power from a LAN connection. Summit X250e-24x supports Carrier Ethernet edge deployment with its flexible fiber connectivity options. Summit X250e-24x can support 100BASE-FX, 100BASE-LX10 and 100BASE-BX on its SFP ports depending upon deployment requirements.

Summit X250e supports hardware-based routing for both IPv4 and IPv6 to help provide investment protection by allowing the rollout of IPv6 in your network now or in the future.

The flexible Summit X250e switch provides high-density Fast Ethernet ports plus dedicated 40 Gbps high-speed stacking ports in a compact 1RU format, supporting a full range of Layer 2 to Layer 4 functionality on every port for high productivity. Optional redundant power supplies are available for each switch to help secure against power anomalies.

## Target Applications

- Edge Power over Ethernet (PoE) and non-PoE switch providing intelligent 10/100BASE-T connectivity to the desktop in a network running ExtremeXOS from the core to the edge
- Carrier Ethernet edge switching with 100BASE-X provides advanced fiber connectivity to the customer for both AC and DC powered environments

## Voice-Class Availability

- Modular ExtremeXOS operating system
- Ethernet Automatic Protection Switching (EAPS) resiliency protocol
- SummitStack™—highly available, high-speed stacking support

## Designed for Converged Network Applications

- Quality of Service (QoS) with advanced traffic management capabilities for converged applications
- Convergence-ready connectivity with Voice-over-IP (VoIP) automatic provisioning with Universal Port capability
- Comprehensive network management

## Comprehensive Security

- User policy, host integrity enforcement and Identity Management
- Extensive MAC and IP security functionality to help prevent man-in-the-middle attacks
- Universal Port dynamic security profile to provide fine granular security policy in the network

Make Your Network Mobile

# Voice-Class Availability

**Powered by the ExtremeXOS operating system, the Summit X250e switch supports process recovery and application upgrades without the need for a system reboot. Summit X250e offers the high network availability required for converged applications.**

## Modular Operating System for High Availability Operation

### Preemptive Multitasking and Protected Memory

Summit X250e switches allow each of many applications—such as Open Shortest Path First (OSPF) and Spanning Tree Protocol (STP)—to run as separate Operating System (OS) processes that are protected from each other. This drives increased system integrity and helps protect against Denial of Service (DoS) attacks.

### Process Monitoring and Restart

ExtremeXOS improves network availability using process monitoring and restart. Each independent OS process is monitored in real time. If a process becomes unresponsive or stops running, it can be automatically restarted.

### Loadable Software Modules

The modular design of the ExtremeXOS OS allows the upgrading of individual software modules, should this be necessary, leading to higher availability in the network (see Figure 1).

## High Availability Network Protocols

### Ethernet Automatic Protection Switching (EAPS)

EAPS allows the IP network to provide the level of resiliency and uptime that users expect from their traditional voice network. EAPS differs from Spanning Tree or Rapid Spanning Tree protocols and offers sub-second (less than 50 milliseconds) recovery that helps deliver consistent failover regardless of the number of VLANs, network nodes or network topology. Since EAPS allows the network to recover almost transparently, VoIP calls will not drop and digital video feeds will not freeze or pixelize in most situations.

### Spanning Tree/Rapid Spanning Tree Protocols

Summit X250e switches support Spanning Tree (802.1D), Per VLAN Spanning Tree (PVST+), Rapid Spanning Tree (802.1w) and Multiple Instances of Spanning Tree (802.1s) protocols for Layer 2 resiliency.

### Software-Enhanced Availability

Software-enhanced availability allows users to remain connected to the network even if part of the network infrastructure is down. Summit X250e switches continuously check for problems in the uplink connections using advanced Layer 3 protocols such as OSPF, VRRP and Extreme Standby Router Protocol™ (ESRP, supported in Layer 2 or Layer 3), and dynamically route traffic around the problem.

### Equal Cost Multipath Routing

Equal Cost Multipath (ECMP) routing allows uplinks to be load balanced for performance and cost savings while also supporting redundant failover. If an uplink fails, traffic is automatically routed to the remaining uplinks and connectivity is maintained.

### Link Aggregation (802.3ad)

Link aggregation allows trunking of up to eight links on a single logical connection, for up to 2 Gigabits per Second (Gbps) of redundant bandwidth per logical connection.

### Multi-Switch LAG (M-LAG)

M-LAG can address bandwidth limitations and improve network resiliency, in part by routing network traffic around bottlenecks, reducing the risks of a single point of failure, and allowing load balancing across multiple switches.

## Voice-Grade Stacking with SummitStack

Summit X250e offers dual stacking interfaces to provide high-speed 40 Gbps stacking bandwidth. SummitStack architecture is designed to support converged services by its highly available, rapid failover capability with n-1 master redundancy, distributed Layer 2 and Layer 3 switching, link aggregation across the stack and distributed uplinks. SummitStack supports up to eight units in a stack (the mixture of the units can be Summit X250e, X450e, X450a, X460, X480 and X650 series switches running the same version of ExtremeXOS) and provides sub-second failover for path failure and hitless master/backup failover along with hitless protocol support such as OSPF graceful restart, PoE configuration and Network Login user authentication.

Summit X250e provides chassis-like management and availability with its SummitStack stacking technology (see Figure 2).

# Voice-Class Availability

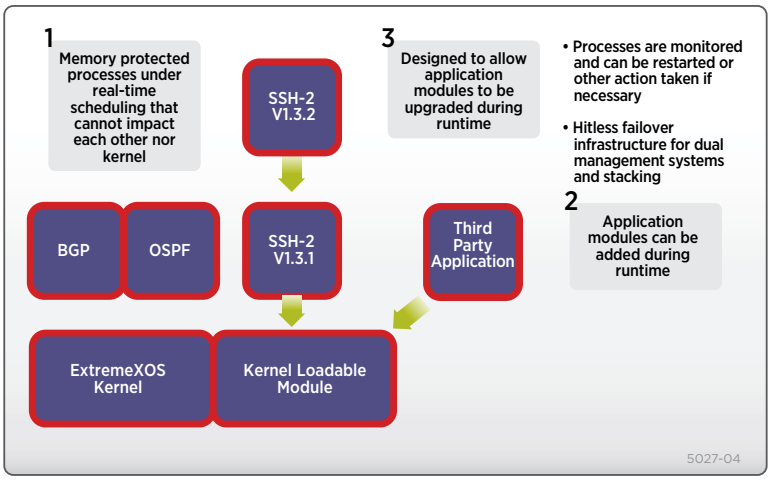

1
Memory protected processes under real-time scheduling that cannot impact each other nor kernel
SSH-2 V1.3.2
3
Designed to allow application modules to be upgraded during runtime
• Processes are monitored and can be restarted or other action taken if necessary
• Hitless failover infrastructure for dual management systems and stacking
2
Application modules can be added during runtime
BGP
OSPF
SSH-2 V1.3.1
Third Party Application
ExtremeXOS Kernel
Kernel Loadable Module
5027-04

*Figure 1: ExtremeXOS Modular Design*

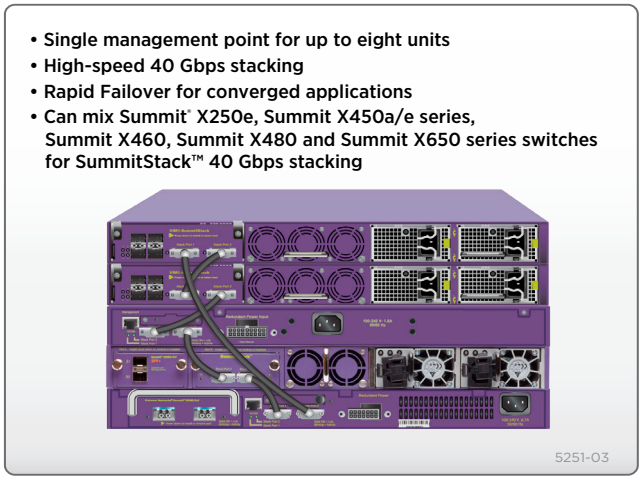

• Single management point for up to eight units
• High-speed 40 Gbps stacking
• Rapid Failover for converged applications
• Can mix Summit® X250e, Summit X450a/e series, Summit X460, Summit X480 and Summit X650 series switches for SummitStack™ 40 Gbps stacking
5251-03

*Figure 2: SummitStack Stacking Architecture*

# Designed for High-Performance Network Applications

**Summit X250e switches provide non-blocking architecture with copper and fiber Fast Ethernet ports for demanding edge applications. Combining exceptional QoS and advanced traffic management with resiliency, comprehensive security features and non-blocking performance, Summit X250e switches are designed to be the cornerstone of an advanced intelligent converged network.**

## Exceptional Policy-based QoS with Advanced Traffic Management for Converged Applications

Summit X250e provides eight hardware queues per port to support granular traffic classification with bandwidth allocation. 1,024 centralized classifiers per 24-port block can use information from Layers 1 through 4 to prioritize and meter incoming packets at line-rate. When metering traffic, the switches can drop out-of-spec traffic or flag it for later action. To expedite upstream traffic handling, a packet's classification can be carried forward with Layer 2 (802.1p) and Layer 3 (Diffserv) markings. Summit X250e provides advanced traffic management features that support the high-quality triple play of voice, video and data services.

## Efficient Management to Handle Convergence-Driven Network Changes

### Universal Port—VoIP Auto-Provisioning

Summit X250e sets the stage for convergence applications by allowing enterprises to add new access devices in a non-disruptive plug-and-play fashion. Voice and wireless services can be easily implemented without major network upgrades. Summit X250e supports the automated provisioning of VoIP using Link Layer Discovery Protocol (LLDP) and the event-based command scripting capability. It allows dynamic configuration of voice VLANs and QoS. This auto-configuration capability allows you to configure VoIP phone settings such as voice VLAN settings, call server IP address configuration, etc. (see Figure 3). This level of simplicity in managing network changes can reduce operating expenses.

### Power over Ethernet (PoE)

Deployments of IP Telephony depend on reliable, consistent power from the Ethernet jack. Summit X250e-24p and Summit X250e-48p are the basis for a reliable LAN telephony infrastructure with fully redundant resiliency to match the failover requirements for latency-sensitive services like VoIP phones. With Summit X250e-24p or 48p, deployment of powered LAN devices is quick and easy with its support of the IEEE 802.3af standard and full Class 3 power availability on all ports, backed up 100% by the EPS-500 redundant power supply (Summit X250e-24p). Summit X250e-48p can provide up to 370W of PoE power and can be increased up to 740W of PoE power to provide full 15.4W Class 3 devices on all 48 ports by adding an External Power System (EPS-C and EPS-600LS).

### Voice-Grade Connections

Granular QoS, low latency and low jitter enable voice-quality connections. Summit X250e supports a range of QoS technologies that can prioritize and predictably handle high-priority traffic policing or rate limiting on ingress, 802.1Q tagging and Diffserv marking, and shaping on egress with eight queues per port. The Extreme Networks tradition of building products with low latency and jitter continues with the Summit X250e series.

### Comprehensive Network Management

As the network becomes a foundation of the enterprise application, network management becomes an important piece of the solution. Summit X250e supports comprehensive network management through Command Line Interface (CLI), SNMP v1, v2c, v3 and an embedded XML-based Web User Interface, ExtremeXOS ScreenPlay™. With a variety of management options and consistency across other Extreme Networks modular and stackable switches, Summit X250e series switches can provide ease of management for demanding converged applications.

Extreme Networks has developed tools that simplify and help in efficiently managing your network. Ridgeline™ network and service management provides fault, configuration, accounting, performance and security functions, allowing more effective management of Extreme Networks products, solutions and third-party devices, in a converged network.

For carrier networks, Ridgeline enables the shift from reactive circuit monitoring to proactive service management. The key features integrated into the Service Advisor Feature Pack unify service fulfillment, service assurance and service engineering to enable carriers to more effectively manage next-generation residential triple play, business Ethernet and Ethernet mobile backhaul services.

# Designed for High-Performance Network Applications

## Advanced Routing Capabilities for the Edge

Summit X250e supports advanced protocols for an efficient and productive network. Summit X250e switches provide static and RIP routing for simple IPv4 and IPv6 Layer 3 deployment. An optional ExtremeXOS Advanced Edge license extends the feature set to include other important edge functions such as:

- Edge OSPF for much greater extensibility than RIP can provide
- Edge PIM sparse modes for routing of multicast streams
- Policy-based routing
- sFlow® hardware sampling

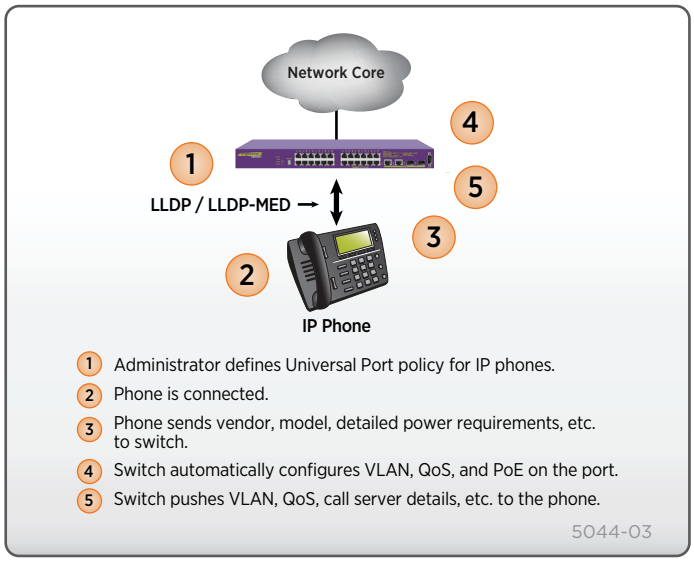

Network Core
1
4
5
LLDP / LLDP-MED
3
2
IP Phone
1 Administrator defines Universal Port policy for IP phones.
2 Phone is connected.
3 Phone sends vendor, model, detailed power requirements, etc. to switch.
4 Switch automatically configures VLAN, QoS, and PoE on the port.
5 Switch pushes VLAN, QoS, call server details, etc. to the phone.
5044-03

*Figure 3: Universal Port Voice-over-IP Provisioning*

# Comprehensive Security Management

**Implementing a secure network means providing protection at the network perimeter as well as the core. Summit X250e series uses advanced security functions to help protect your network from known or potential threats. Security offerings from Extreme Networks encompass three key areas: user and host integrity, threat detection and response, and hardened network infrastructure.**

## User Authentication and Host Integrity Checking

### Network Login and Dynamic Security Profile

Network Login capability enforces user admission and usage policies. Summit X250e series switches support a comprehensive range of Network Login options by providing an 802.1x agent-based approach, a Web-based (agent-less) login capability for guests, and a MAC-based authentication model for devices. With these modes of Network Login, only authorized users and devices are permitted to connect to the network and be assigned to the appropriate VLAN. The Universal Port scripting framework lets you implement Dynamic Security Profiles which in sync with Network Login allows you to implement fine-grained and robust security policies. Upon authentication, the switch can load dynamic ACL/QoS profiles for a user or group of users, to deny/allow the access to the application servers or segments within the network.

### Multiple Supplicant Support

Shared ports represent a potential vulnerability in a network. Multiple supplicant capability on a switch allows it to uniquely authenticate and apply the appropriate policies and VLANs for each user or device on a shared port.

Multiple supplicant support helps secure IP Telephony and wireless access. Converged network designs often involve the use of shared ports (see Figure 4).

### Media Access Control (MAC) Lockdown

MAC security allows the lockdown of a port to a given MAC address and limiting the number of MAC addresses on a port. This can be used to dedicate ports to specific hosts or devices such as VoIP phones or printers and avoid abuse of the port—a capability that can be especially useful in environments such as hotels. In addition, an aging timer can be configured for the MAC lockdown, protecting the network from the effects of attacks using (often rapidly) changing MAC addresses.

### IP Security

ExtremeXOS IP security framework helps protect the network infrastructure, network services such as DHCP and DNS, and host computers from spoofing and man-in-the-middle attacks. It also helps protect the network from statically configured and/or spoofed IP addresses and builds an external trusted database of MAC/IP/port bindings so you know where the traffic from a specific address comes from for immediate defense.

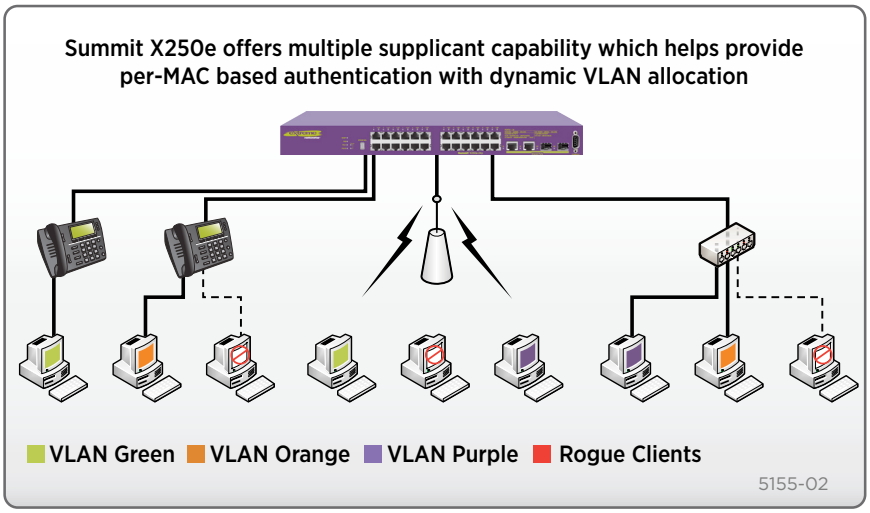

Summit X250e offers multiple supplicant capability which helps provide per-MAC based authentication with dynamic VLAN allocation
VLAN Green
VLAN Orange
VLAN Purple
Rogue Clients
5155-02

*Figure 4: Multiple Supplicant Support*

# Comprehensive Security Management

### Identity Manager

Identity Manager allows network managers to track users who access their network. User identity is captured based on NetLogin authentication, LLDP discovery and Kerberos snooping. ExtremeXOS uses the information to then report on the MAC, VLAN, computer hostname, and port location of the user. Further, Identity Manager can create both roles and policies, and then bind them together to create role-based profiles based on organizational structure or other logical groupings, and apply them across multiple users to allow appropriate access to network resources. In addition, support for Wide Key ACLs further improves security by going beyond the typical source/destination and MAC address as identification criteria access mechanism to provide filtering capabilities.

### Host Integrity Checking

Host integrity checking helps keep infected or noncompliant machines off the network. Summit X250e series switches support a host integrity or endpoint integrity solution that is based on the model from the Trusted Computing Group.

## Network Intrusion Detection and Response

### CLEAR-Flow Security Rules Engine

CLEAR-Flow Security Rules Engine provides first order threat detection and mitigation, and mirrors traffic to appliances for further analysis of suspicious traffic in the network.

### Hardware-Based sFlow Sampling

sFlow is a sampling technology that provides the ability to continuously monitor application-level traffic flows on all interfaces simultaneously. The sFlow agent is a software process that runs on Summit X250e and packages data into sFlow datagrams that are sent over the network to an sFlow collector. The collector gives an up-to-the-minute view of traffic across the entire network, providing the ability to troubleshoot network problems, control congestion and detect network security threats.

### Port Mirroring

For threat detection and prevention, Summit X250e supports many-to-one and one-to-many port mirroring. This allows the mirroring of traffic to an external network appliance such as an intrusion detection device for trend analysis or for utilization by a network administrator for diagnostic purposes. Port Mirroring can also be enabled across switches in a stack.

### Line-Rate ACLs

ACLs are one of the most powerful components used in controlling network resource utilization as well as protecting the network. Summit X250e supports 1,024 centralized ACLs per 24-port block based on Layer 2, 3 or 4-header information such as the MAC, IPv4 and IPv6 address or TCP/UDP port. ACLs are used for filtering the traffic, as well as classifying the traffic flow to control bandwidth, priority, mirroring and policy-based routing/switching.

### Denial of Service Protection

Summit X250e can effectively handle DoS attacks. If the switch detects an unusually large number of packets in the CPU input queue, it will assemble ACLs that automatically stop these packets from reaching the CPU. After a period of time, these ACLs are removed, and reinstalled if the attack continues. ASIC-based LPM routing eliminates the need for control plane software to learn new flows, allowing more network resilience against DoS attacks.

### Secure Management

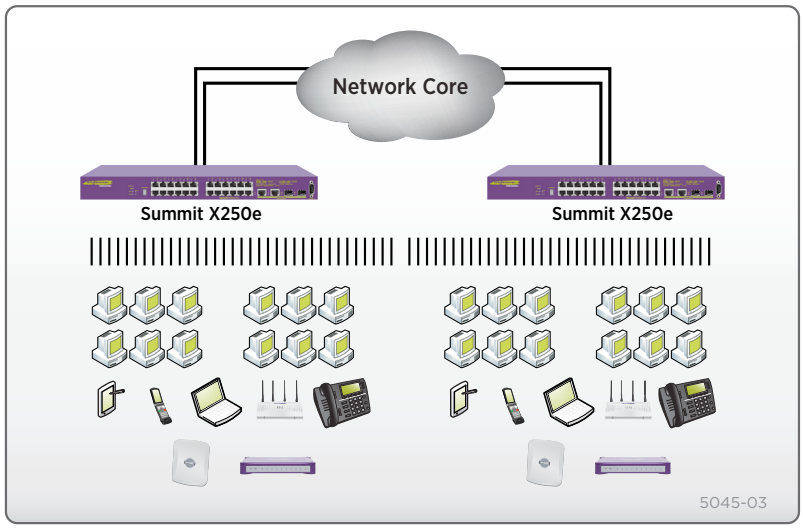
To prevent management data from being intercepted or altered by unauthorized access, Summit X250e supports SSH2, SCP and SNMPv3 protocols. The MD5 hash algorithm used in authentication prevents attackers from tampering with valid data during routing sessions.

# Target Applications

## Edge Connectivity for Advanced Enterprise Applications

Edge PoE and non-PoE switches provide intelligent 10/100BASE-T connectivity to the desktop in a network running ExtremeXOS from the edge to the core.

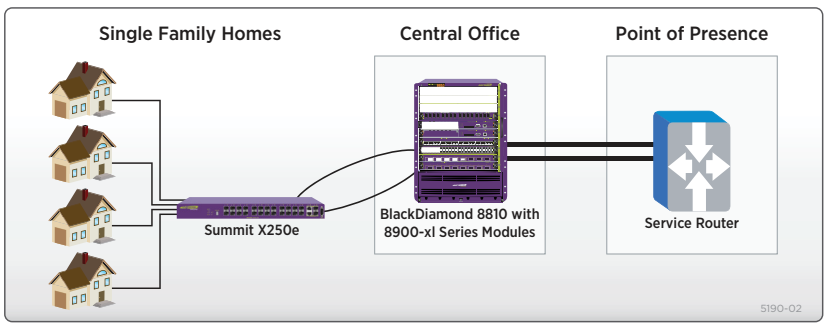
Summit X250e is deployed as intelligent Fast Ethernet edge switch, extending the benefits of the ExtremeXOS operating system to the network edge in the enterprise network. This uniformity allows consistent quality and performance throughout your converged network while minimizing operational inefficiencies. With line-rate performance and low latency, the Summit X250e edge switch connects wireless devices, LAN telephony, PDAs and other equipment without compromising security, scalability, availability, mobility or management.




## Edge Connectivity for Advanced Carrier Ethernet Applications

Carrier Ethernet edge switching with 100BASE-X provides advanced fiber connectivity to the customer.

Summit X250e is deployed as an intelligent Fast Ethernet edge switch, extending the benefits of the ExtremeXOS operating system to the network edge in the Carrier Ethernet network. This uniformity allows consistent quality and performance throughout a converged network while minimizing operational inefficiencies. With line-rate performance and low latency, the Summit X250e edge switch provides copper 10/100BASE-T connectivity as well as 100BASE-X connectivity including 100BASE-FX, 100BASE-LX10 and 100BASE-BX. A flexible connectivity option is offered without compromising security, scalability, availability, mobility or management. Summit X250e has both AC and DC powered models for flexible deployments.



# Accessories

## Summit X250e Series Redundant PSUs

### EPS-160 and EPS-T

EPS-160 is the redundant AC Power Supply for lower power consuming AC PSU-based Summit switches. The EPS-T power tray is required to rack-mount this external power supply. EPS-T power tray can take up to two EPS-160 power modules, and each EPS-160 works individually. EPS-160 comes with a DC output cable to connect between the Summit switch and EPS-160.

Front View

### EPS-500

EPS-500 is the redundant AC Power Supply for higher power consuming AC PSU-based switches including PoE-enabled switches. EPS-500 is one rack unit height and works in standalone mode. EPS-500 can be rack-mounted in a regular 19 inch rack system. EPS-500 comes with a DC output cable to connect between the Summit switch and EPS-500.

Front View

Rear View

### EPS-600LS and EPS-C

EPS-600LS is a power module that works with the EPS-C External Power System Chassis. EPS-C has three slots for EPS-600LS and one DC output to connect to high-density PoE Summit switches. Depending upon the number of EPS-600LS installed in EPS-C, it can provide: 1) Redundant configuration for up to 370 watts of PoE power with one EPS-600LS installed; 2) Non-redundant configuration for up to 740 watts of PoE power when two EPS-600LS are installed; and 3) Redundant configuration for up to 740 watts of PoE power when three EPS-600LS are installed. EPS-C comes with a DC output cable to connect between the Summit switch and EPS-C with EPS-600LS installed.

Front View

Rear View

Configured View

### EPS-150DC and EPS-T2

EPS-150DC is the redundant DC Power Supply for DC PSU-based Summit switches. The EPS-T2 power tray is required to rack-mount this external power supply. EPS-T2 power tray can take up to two EPS-150DC power modules, and each EPS-150DC works individually. EPS-150DC comes with a DC output cable to connect between the Summit switch and EPS-150DC.

Front View

Rear View

### Redundant PSU Compatibility Matrix

| Summit Switch Models | Summit Switch Part Number(s) | External Redundant PSU options |
|---|---|---|
| Summit X250e-24t/48t/24x | 15101/15103/15109 | EPS-160 power module (10907) with EPS-T (10906) |
| Summit X250e-24p | 15105 | EPS-500 external power supply (10911) |
| Summit X250e-48p/48p-TAA | 15107/15108 | EPS-C (10912) and EPS-600LS (10913) |
| Summit X250e-24tDC/48tDC/24xDC | 15121/15122/15123 | EPS-150DC power module (10909) with EPS-T2 (10910) |

# Technical Specifications

## ExtremeXOS 12.5 Supported Protocols

### Switching

- RFC 3619 Ethernet Automatic Protection Switching (EAPS) and EAPSv2
- IEEE 802.1D – 1998 Spanning Tree Protocol (STP)
- IEEE 802.1D – 2004 Spanning Tree Protocol (STP and RSTP)
- IEEE 802.1w – 2001 Rapid Reconfiguration for STP, RSTP
- IEEE 802.1Q – 2003 (formerly IEEE 802.1s) Multiple Instances of STP, MSTP
- EMISTP, Extreme Multiple Instances of Spanning Tree Protocol
- PVST+, Per VLAN STP (802.1Q interoperable)
- Draft-ietf-bridge-rstpmib-03.txt – Definitions of Managed Objects for Bridges with Rapid Spanning Tree Protocol
- Extreme Standby Router Protocol (ESRP)
- IEEE 802.1Q – 1998 Virtual Bridged Local Area Networks
- IEEE 802.3ad Static load sharing configuration and LACP based dynamic configuration
- Software Redundant Ports
- Multi-switch Link Aggregation Groups (M-LAG)
- IEEE 802.1AB – LLDP Link Layer Discovery Protocol
- LLDP Media Endpoint Discovery (LLDP-MED), ANSI/TIA-1057, draft 08
- Extreme Discovery Protocol (EDP)
- Extreme Loop Recovery Protocol (ELRP)
- Extreme Link State Monitoring (ELSM)
- IEEE 802.1ag L2 Ping and traceroute, Connectivity Fault Management
- ITU-T Y.1731 Frame delay measurements

### Management and Traffic Analysis

- RFC 2030 SNTP, Simple Network Time Protocol v4
- RFC 854 Telnet client and server
- RFC 783 TFTP Protocol (revision 2)
- RFC 951, 1542 BootP
- RFC 2131 BOOTP/DHCP relay agent and DHCP server
- RFC 1591 DNS (client operation)
- RFC 1155 Structure of Management Information (SMIv1)
- RFC 1157 SNMPv1
- RFC 1212, RFC 1213, RFC 1215 MIB-II, Ethernet-Like MIB & TRAPs
- RFC 1573 Evolution of Interface
- RFC 1650 Ethernet-Like MIB (update of RFC 1213 for SNMPv2)
- RFC 1901, 1905 – 1908 SNMPv2c, SMIv2 and Revised MIB-II
- RFC 2576 Coexistence between SNMP Version 1, Version 2 and Version 3
- RFC 2578 – 2580 SMIv2 (update to RFC 1902 – 1903)
- RFC 3410 – 3415 SNMPv3, user based security, encryption and authentication
- RFC 3826 – The Advanced Encryption Standard (AES) Cipher Algorithm in the SNMP User-based Security Model
- RFC 1757 RMON 4 groups: Stats, History, Alarms and Events
- RFC 2021 RMON2 (probe configuration)
- RFC 2613 SMON MIB
- RFC 2925 Ping/Traceroute MIB
- RFC 2668 802.3 MAU MIB
- draft-ietf-hubmib-mau-mib-v3-02.txt
- RFC 1643 Ethernet MIB
- RFC 1493 Bridge MIB
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 2737 Entity MIB v2
- RFC 2233 Interface MIB
- RFC 3621 PoE-MIB (PoE switches only)
- IEEE 802.1ag MIB
- Secure Shell (SSH-2) client and server
- Secure Copy (SCP-2) client and server
- Secure FTP (SFTP) server
- sFlow version 5
- Configuration logging
- Multiple Images, Multiple Configs
- RFC 3164 BSD Syslog Protocol with Multiple Syslog Servers
  - 999 Local Messages (criticals stored across reboots)
- Extreme Networks vendor MIBs (includes FDB, PoE, CPU, Memory MIBs)
- XML APIs over Telnet/SSH and HTTP/HTTPS
- Web-based device management interface – ExtremeXOS ScreenPlay
- IP Route Compression
- Stacking – SummitStack

### Security, Switch and Network Protection

- Secure Shell (SSH-2), Secure Copy (SCP-2) and SFTP client/server with encryption/authentication (requires export controlled encryption module)
- SNMPv3 user based security, with encryption/authentication (see above)
- RFC 1492 TACACS+
- RFC 2138 RADIUS Authentication
- RFC 2139 RADIUS Accounting
- RFC 3579 RADIUS EAP support for 802.1x
- RADIUS Per-command Authentication
- Access Profiles on All Routing Protocols
- Access Policies for Telnet/SSH-2/SCP-2
- Network Login – 802.1x, Web and MAC-based mechanisms
- IEEE 802.1x – 2001 Port-Based Network Access Control for Network Login
- Multiple supplicants with multiple VLANs for Network Login (all modes)
- Fallback to local authentication database (MAC and Web-based methods)
- Guest VLAN for 802.1x
- RFC 1866 HTML – Used for Web-based Network Login and ExtremeXOS ScreenPlay
- SSL/TLS transport – used for Web-based Network Login and ExtremeXOS ScreenPlay (requires export controlled encryption module)
- MAC Security – Lockdown and Limit
- IP Security – RFC 3046 DHCP Option 82 with port and VLAN ID
- IP Security – Trusted DHCP Server
- Layer 2/3/4 Access Control Lists (ACLs)
- RFC 2267 Network Ingress Filtering
- RPF (Unicast Reverse Path Forwarding) Control via ACLs
- Wire-speed ACLs
- Rate Limiting/Shaping by ACLs
- IP Broadcast Forwarding Control
- ICMP and IP-Option Response Control
- SYN attack protection
- CPU DoS Protection with traffic rate-limiting to management CPU
- Robust against common network attacks:
  - CERT (http://www.cert.org)
  - CA-2003-04: "SQL Slammer"
  - CA-2002-36: "SSHredder"
  - CA-2002-03: SNMP vulnerabilities
  - CA-98-13: tcp-denial-of-service
  - CA-98.01: smurf
  - CA-97.28:Teardrop_Land -Teardrop and "LAND" attack
  - CA-96.26: ping
  - CA-96.21: tcp_syn_flooding
  - CA-96.01: UDP_service_denial
  - CA-95.01: IP_Spoofing_Attacks_and_ Hijacked_ Terminal_Connections
  - IP Options Attack
- Host Attack Protection
  - Teardrop, boink, opentear, jolt2, newtear, nestea, syndrop, smurf, fraggle, papasmurf, synk4, raped, winfreeze, ping –f, ping of death, pepsi5, Latierra, Winnuke, Simping, Sping, Ascend, Stream, Land, Octopus

### Security, Router Protection

- IP Security – DHCP enforcement via Disable ARP Learning
- IP Security – Gratuitous ARP Protection
- IP Security – DHCP Secured ARP/ARP Validation
- Routing protocol MD5 authentication

### Security Detection and Protection

- CLEAR-Flow, threshold-based alerts and actions
- Identity Manager

### IPv4 Host Services

- RFC 1122 Host Requirements
- RFC 768 UDP
- RFC 791 IP
- RFC 792 ICMP
- RFC 793 TCP
- RFC 826 ARP
- RFC 894 IP over Ethernet
- RFC 1027 Proxy ARP
- RFC 2068 HTTP server
- IGMP v1/v2/v3 Snooping with Configurable Router Registration Forwarding
- IGMP Filters
- PIM Snooping
- Static IGMP Membership
- Multicast VLAN Registration (MVR)
- Static IGMP Membership
- Multicast VLAN Registration (MVR)

### IPv4 Router Services

- Static Unicast Routes
- Static Multicast Routes
- RFC 1112 IGMP v1
- RFC 2236 IGMP v2
- RFC 3376 IGMP v3

# Technical Specifications

- RFC 2933 IGMP MIB
- RFC 1812 Requirements for IP Version 4 Routers
- RFC 1519 CIDR
- RFC 1256 IPv4 ICMP Router Discovery (IRDP)
- RFC 1058 RIP v1
- RFC 2453 RIP v2
- Static ECMP
- RFC 2096 IPv4 Forwarding Table MIB
- RFC 1724 RIPv2 MIB

## IPv4 Router Services

*Requires Advanced Edge License or above*

- RFC 3768 VRRPv2
- RFC 2787 VRRP MIB
- RFC 2328 OSPF v2 (Edge-mode)
- OSPF ECMP
- OSPF MD5 Authentication
- RFC 1587 OSPF NSSA Option
- RFC 1765 OSPF Database Overflow
- RFC 2370 OSPF Opaque LSA Option
- RFC 3623 OSPF Graceful Restart
- RFC 1850 OSPFv2 MIB
- RFC 2362 PIM-SM (Edge-mode)
- RFC 2934 PIM MIB
- RFC 3569, draft-ietf-ssm-arch-06.txt PIM-SSM PIM Source Specific Multicast
- draft-ietf-pim-mib-v2-o1.txt
- Mtrace, a "traceroute" facility for IP Multicast: draft-ietf-idmr-traceroute-ipm-07
- Mrinfo, the multicast router information tool based on Appendix-B of draft-ietf-idmr-dvmrp-v3-11

## IPv6 Host Services

- RFC 3587, Global Unicast Address Format
- Ping over IPv6 transport
- Traceroute over IPv6 transport
- RFC 5095, Internet Protocol, Version 6 (IPv6) Specification
- RFC 4861, Neighbor Discovery for IP Version 6, (IPv6)
- RFC 2463, Internet Control Message Protocol (ICMPv6) for the IPv6 Specification
- RFC 2464, Transmission of IPv6 Packets over Ethernet Networks
- RFC 2465, IPv6 MIB, General Group and Textual Conventions
- RFC 2466, MIB for ICMPv6
- RFC 2462, IPv6 Stateless Address Auto Configuration – Host Requirements
- RFC 1981, Path MTU Discovery for IPv6, August 1996 – Host Requirements
- RFC 3513, Internet Protocol Version 6 (IPv6) Addressing Architecture
- Telnet server over IPv6 transport
- SSH-2 server over IPv6 transport

## IPv6 Interworking and Migration

*Requires Advanced Edge License*

- RFC 2893, Configured Tunnels
- RFC 3056, 6to4

## IPv6 Router Services

- RFC 2462, IPv6 Stateless Address Auto Configuration – Router Requirements
- RFC 1981, Path MTU Discovery for IPv6, August 1996 – Router Requirements
- RFC 2710, IPv6 Multicast Listener Discovery v1 (MLDv1) Protocol
- Static Unicast routes for IPv6
- RFC 2080, RIPng
- RFC 2740 OSPF v3 (Edge-mode) (Requires Advanced Edge License or above)
- Static ECMP

## QoS and VLAN Services

### Quality of Service and Policies

- IEEE 802.1D – 1998 (802.1p) Packet Priority
- RFC 2474 DiffServ Precedence, including 8 queues/port
- RFC 2598 DiffServ Expedited Forwarding (EF)
- RFC 2597 DiffServ Assured Forwarding (AF)
- RFC 2475 DiffServ Core and Edge Router Functions

### Traffic Engineering

- RFC 3784 IS-IS Externs for Traffic Engineering (wide metrics only)

### VLAN Services: VLANs, vMANs

- IEEE 802.1Q VLAN Tagging
- IEEE 802.1v: VLAN classification by Protocol and Port
- Port-based VLANs
- Protocol-based VLANs
- MAC-based VLANs
- Multiple STP domains per VLAN
- Upstream Forwarding Only/Disable Flooding
- RFC 5517 Private VLANs
- VLAN Translation
- IEEE 802.1ad Provider Bridge Network, virtual MANs (vMANs)
- vMAN Ethertype Translation/Secondary vMAN Ethertype
- Multicast Support for PVLAN
- Multicast Support for VLAN Aggregation
- VLAN Aggregation (Requires Advanced Edge License or above)

# Summit X250e-24t

## General Specifications

### Performance

- 48.8 Gbps switch fabric bandwidth
- 36.3 Mpps frame forwarding rate
- 9,216 Byte maximum packet size (Jumbo Frame)
- 128 load sharing trunks, up to 8 members per trunk
- 8 QoS queues/port
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 1,024 centralized ACL rules per switch

### Forwarding Tables

- Layer 2/MAC Addresses: 8K
- IPv4 LPM Entries: 512
- IPv6 LPM Entries: 256

### Rate Limiting

- Ingress bandwidth policing/rate limiting per flow
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 64Kbps
- Available Rate Limiters: 1,024 per switch

### Indicators

- Per port status LED
- System Status LEDs: management, fan and power

### Ports

- 24 ports 10/100BASE-T with auto-speed and auto-polarity
- 2 ports Gigabit Ethernet (100/1000BASE-X SFP, shared PHY with 2 10/100/1000BASE-T ports)
- 2 SummitStack stacking interfaces
- 1 port Serial (control port)
- 1 10/100BASE-T out-of-band management port

### External Power Supply Support

- EPS-160 with EPS-T

## Physical Specifications

### Dimensions and Weight

- Height: 1.73 Inches/4.4 Cm
- Width: 17.35 Inches/44.1 Cm
- Depth: 12.13 Inches/30.8 Cm
- Weight: 10.47 Lbs/4.76 Kg

## Operating Specifications

### Power & Acoustic Sound

- Voltage Input Range: 90 – 264V
- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 1.0A
- Input Current: 0.5A @ 115V~ (lowline) 0.25A @ 230V~ (high-line)
- Maximum In-Rush Current: 30A @115V, 60A @ 230V
- Efficiency: 83% with 60% – 100% load
- Line Frequency Range: 47 – 63 Hz
- Power Supply Input Socket: IEC 320 C14
- Power Cord Input Plug: IEC 320 C13
- Heat Dissipation: 36W (123 BTU/h)
- Power Consumption: 36W (123 BTU/h)
- Acoustic Noise (Low FAN Speed): 37 dBA per ISO 7779
- Acoustic Noise (High FAN Speed): 45 dBA per ISO 7779

# Technical Specifications

## Summit X250e-48t

### General Specifications

#### Performance

- 97.6 Gbps switch fabric bandwidth
- 39.9 Mpps frame forwarding rate
- 9,216 Byte maximum packet size (Jumbo Frame)
- 128 load sharing trunks, up to 8 members per trunk
- 8 QoS queues/port
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 1,024 centralized ACL rules per 24-port

#### Forwarding Tables

- Layer 2/MAC Addresses: 8K
- IPv4 LPM Entries: 512
- IPv6 LPM Entries: 256

#### Rate Limiting

- Ingress bandwidth policing/rate limiting per flow
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 64Kbps
- Available Rate Limiters: 1,024 per switch

#### Indicators

- Per port status LED
- System Status LEDs: management, fan and power

#### Ports

- 48 ports 10/100BASE-T with auto-speed and auto-polarity
- 2 ports Gigabit Ethernet (100/1000BASE-X SFP, shared PHY with 2 10/100/1000BASE-T ports)
- 2 SummitStack stacking interfaces
- 1 port serial (console port)
- 1 10/100BASE-T out-of-band management port

#### External Power Supply Support

- EPS-160 with EPS-T

### Physical Specifications

#### Dimensions and Weight

- Height: 1.73 Inches/4.4 Cm
- Width: 17.35 Inches/44.1 Cm
- Depth: 15.28 Inches/38.8 Cm
- Weight: 12.06 lbs/5.48 Kg

### Operating Specifications

#### Power & Acoustic Sound

- Voltage Input Range: 90 – 264V
- Nominal Input Ratings: 100-240V~, 50/60Hz, 1.0A
- Input Current: 0.6A @ 115V~ (lowline) 0.3A @ 230V~ (high-line)
- Maximum In-Rush Current: 30A @115V, 60A @ 230V
- Efficiency: 83% with 60% – 100% load
- Line Frequency Range: 47 – 63 Hz
- Power Supply Input Socket: IEC 320 C14
- Power Cord Input Plug: IEC 320 C13
- Heat Dissipation: 51W (174 BTU/h)
- Power Consumption: 51W (174 BTU/h)
- Acoustic Noise (Low FAN Speed): 37 dBA per ISO 7779
- Acoustic Noise (High FAN Speed): 47 dBA per ISO 7779

## Summit X250e-24x

### General Specifications

#### Performance

- 48.8 Gbps switch fabric bandwidth
- 36.3 Mpps frame forwarding rate
- 9,216 Byte maximum packet size (Jumbo Frame)
- 128 load sharing trunks, up to 8 members per trunk
- 8 QoS queues/port
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 1,024 centralized ACL rules per switch

#### Forwarding Tables

- Layer 2/MAC Addresses: 8K
- IPv4 LPM Entries: 512
- IPv6 LPM Entries: 256

#### Rate Limiting

- Ingress bandwidth policing/rate limiting per flow
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 64Kbps
- Available Rate Limiters: 1,024 per switch

#### Indicators

- Per port status LED
- System Status LEDs: management, fan and power

#### Ports

- 24 ports 100BASE-X supporting 100BASE-X SFP Optical Transceivers
- 2 ports Gigabit Ethernet (100/1000BASE-X SFP, shared PHY with 2 10/100/1000BASE-T ports)
- 2 SummitStack stacking interfaces
- 1 port Serial (control port)
- 1 10/100BASE-T out-of-band management port

#### External Power Supply Support

- EPS-160 and EPS-T

### Physical Specifications

#### Dimensions and Weight

- Height: 1.73 Inches/4.4 Cm
- Width: 17.35 Inches/44.1 Cm
- Depth: 12.13 Inches/30.8 Cm
- Weight: 10.21 Lbs/4.64 Kg

### Operating Specifications

#### Power & Acoustic Sound

- Voltage Input Range: 90 – 264V
- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 1.0A
- Input Current: 1.0A @ 115V~ (lowline) 0.5A @ 230V~ (high-line)
- Maximum In-Rush Current: 30A @ 115V, 60A @ 230V
- Efficiency: 83% with 60% – 100% load
- Line Frequency Range: 47 – 63 Hz
- Power Supply Input Socket: IEC 320 C14
- Power Cord Input Plug: IEC 320 C13
- Heat Dissipation: 49W (167.2 BTU/h)
- Power Consumption: 49W (167.2 BTU/h)
- Acoustic Noise (Low FAN Speed): 37 dBA per ISO 7779
- Acoustic Noise (High FAN Speed): 45 dBA per ISO 7779

# Technical Specifications

## Summit X250e-24p

### General Specifications

#### Performance

- 48.8 Gbps switch fabric bandwidth
- 36.3 Mpps frame forwarding rate
- 9,216 Byte maximum packet size (Jumbo Frame)
- 128 load sharing trunks, up to 8 members per trunk
- 8 QoS queues/port
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 1,024 centralized ACL rules per switch

#### Forwarding Tables

- Layer 2/MAC Addresses: 8K
- IPv4 LPM Entries: 512
- IPv6 LPM Entries: 256

#### Rate Limiting

- Ingress bandwidth policing/rate limiting per flow
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 64Kbps
- Available Rate Limiters: 1,024 per switch

#### Indicators

- Per port status LED
- System Status LEDs: management, fan and power

#### Ports

- 24 ports 10/100BASE-T PoE with auto-speed and auto-polarity
- 2 ports Gigabit Ethernet (100/1000BASE-X SFP, shared PHY with 2 10/100/1000BASE-T ports)
- 2 SummitStack stacking interfaces
- 1 port serial (console port)
- 1 10/100BASE-T out-of-band management port

#### External Power Supply Support

- EPS-500

### Physical Specifications

#### Dimensions and Weight

- Height: 1.73 Inches/4.4 Cm
- Width: 17.35 Inches/44.1 Cm
- Depth: 12.13 Inches/30.8 Cm
- Weight: 12.1 Lbs/5.46 Kg

### Operating Specifications

#### Power & Acoustic Sound

- Voltage Input Range: 90 – 264V
- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 5.5A
- Input Current (with PoE full load): 4.4A @ 115V~ (lowline) 2.2A @ 230V~ (high-line)
- Input Current (without PoE): 0.75A @ 115V~ (lowline) 0.5A @ 230V~ (high-line)
- Maximum In-Rush Current: 30A @115V, 60A @230V
- Efficiency: 81% with 60% – 100% load
- Line Frequency Range: 47 – 63 Hz
- Nominal Frequency Range: 50 – 60 Hz
- Power Supply Input Socket: IEC 320 C14
- Power Cord Input Plug: IEC 320 C13
- Heat Dissipation (with PoE full load): 100W (341 BTU/h)
- Power Consumption (with PoE full load): 470W (1604 BTU/h)
- Heat Dissipation (without PoE): 55W (188 BTU/h)
- Power Consumption (without PoE): 55W (188 BTU/h)
- Acoustic Noise (Low FAN Speed): 39 dBA per ISO 7779
- Acoustic Noise (High FAN Speed): 44 dBA per ISO 7779

## Summit X250e-48p

### General Specifications

#### Performance

- 97.6 Gbps switch fabric bandwidth
- 39.9 Mpps frame forwarding rate
- 9,216 Byte maximum packet size (Jumbo Frame)
- 128 load sharing trunks, up to 8 members per trunk
- 8 QoS queues/port
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 1,024 centralized ACL rules per 24-port

#### Forwarding Tables

- Layer 2/MAC Addresses: 8K
- IPv4 LPM Entries: 512
- IPv6 LPM Entries: 256

#### Rate Limiting

- Ingress bandwidth policing/rate limiting per flow
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 64Kbps
- Available Rate Limiters: 1,024 per switch

#### Indicators

- Per port status LED
- System Status LEDs: management, fan and power

#### Ports

- 48 ports 10/100BASE-T PoE with auto-speed and auto-polarity
- 2 ports Gigabit Ethernet (SFP shared PHY with 2 10/100/1000BASE-T ports)
- 2 SummitStack stacking interfaces
- 1 port serial (console port)
- 1 10/100BASE-T out-of-band management port

#### External Power Supply Support

- EPS-C with EPS-600LS
- External Power Supply–EPS-C Chassis accepts up to three EPS-600LS power modules and provides the following capability depending upon the number of EPS 600LS installed
  - One EPS-600LS
    - Redundant, up to 370W PoE power
  - Two EPS-600LS
    - Redundant, up to 370W PoE power
    - Non-Redundant, up to 740W PoE power
  - Three EPS-600LS
    - Redundant, up to 740W PoE power

### Physical Specifications

#### Dimensions and Weight

- Height: 1.73 Inches/4.4 Cm
- Width: 17.35 Inches/44.1 Cm
- Depth: 15.28 Inches/38.8 Cm
- Weight: 12.06 lbs/5.48 Kg

### Operating Specifications

#### Power & Acoustic Sound

- Voltage Input Range: 90 – 264V
- Nominal Input Ratings: 100 – 240V~, 50/60Hz, 5.5A
- Input Current (with PoE full load): 4.5A @ 115V~ (lowline) 2.25A @ 230V~ (highline)
- Input Current (without PoE): 0.75A @ 115V~ (lowline) 0.5A @ 230V~ (highline)
- Maximum In-Rush Current: 30A @ 115V, 60A @ 230V
- Efficiency: 78% with 60% – 100% load
- Line Frequency Range: 47 – 63 Hz
- Power Supply Input Socket: IEC 320 C14
- Power Cord Input Plug: IEC 320 C13
- Heat Dissipation (with PoE full load): 130W (444 BTU/h)
- Power Consumption (with PoE full load): 525W (1,791 BTU/h)
- Heat Dissipation (without PoE): 75W (256 BTU/h)
- Power Consumption (without PoE): 75W (256 BTU/h)
- Acoustic Noise (Low FAN Speed): 39 dBA per ISO 7779
- Acoustic Noise (High FAN Speed): 46 dBA per ISO 7779

# Technical Specifications

## Summit X250e-24tDC

### General Specifications

#### Performance

- 48.8 Gbps switch fabric bandwidth
- 36.3 Mpps frame forwarding rate
- 9,216 Byte maximum packet size (Jumbo Frame)
- 128 load sharing trunks, up to 8 members per trunk
- 8 QoS queues/port
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 1,024 centralized ACL rules per switch

#### Forwarding Tables

- Layer 2/MAC Addresses: 8K
- IPv4 LPM Entries: 512
- IPv6 LPM Entries: 256

#### Rate Limiting

- Ingress bandwidth policing/rate limiting per flow
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 64Kbps
- Available Rate Limiters: 1,024 per switch

#### Indicators

- Per port status LED
- System Status LEDs: management, fan and power

#### Ports

- 24 ports 10/100BASE-T with auto-speed and auto-polarity
- 2 ports Gigabit Ethernet (100/1000BASE-X SFP, shared PHY with 2 10/100/1000BASE-T ports)
- 2 SummitStack stacking interfaces
- 1 port Serial (control port)
- 1 10/100BASE-T out-of-band management port

#### External Power Supply Support

- EPS-150DC with EPS-T2

### Physical Specifications

#### Dimensions and Weight

- Height: 1.73 Inches/4.4 Cm
- Width: 17.35 Inches/44.1 Cm
- Depth: 12.13 Inches/30.8 Cm
- Weight: 9.88 Lbs/ 4.49 Kg

### Operating Specifications

#### Power & Acoustic Sound

- Voltage Input Range: -40 to -72VDC
- Input Current Rating: 2.0A at -48VDC
- Input Current: 0.8A @ -40VDC, 0.5A @ -72VDC
- Maximum In-Rush Current: 20A @ -48VDC, 30A @ -72VDC
- Efficiency: 78%
- Power Supply Input Socket: TYCO 206061-1
- Power Cord Input Plug: TYCO 206060-1
- Heat Dissipation: 31W (105.8 BTU/h)
- Power Consumption: 31W (105.8 BTU/h)
- Acoustic Noise (Low FAN Speed): 37 dBA per ISO 7779
- Acoustic Noise (High FAN Speed): 45 dBA per ISO 7779

## Summit X250e-48tDC

### General Specifications

#### Performance

- 97.6 Gbps switch fabric bandwidth
- 39.9 Mpps frame forwarding rate
- 9,216 Byte maximum packet size (Jumbo Frame)
- 128 load sharing trunks, up to 8 members per trunk
- 8 QoS queues/port
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 1,024 centralized ACL rules per 24-port

#### Forwarding Tables

- Layer 2/MAC Addresses: 8K
- IPv4 LPM Entries: 512
- IPv6 LPM Entries: 256

#### Rate Limiting

- Ingress bandwidth policing/rate limiting per flow
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 64Kbps
- Available Rate Limiters: 1,024 per switch

#### Indicators

- Per port status LED
- System Status LEDs: management, fan and power

#### Ports

- 48 ports 10/100BASE-T with auto-speed and auto-polarity
- 2 ports Gigabit Ethernet (100/1000BASE-X SFP, shared PHY with 2 10/100/1000BASE-T ports)
- 2 SummitStack stacking interfaces
- 1 port serial (console port)
- 1 10/100BASE-T out-of-band management port

#### External Power Supply Support

- EPS-150DC with EPS-T2

### Physical Specifications

#### Dimensions and Weight

- Height: 1.73 Inches/4.4 Cm
- Width: 17.35 Inches/44.1 Cm
- Depth: 15.28 Inches/38.8 Cm
- Weight: 12.14 Lbs/ 5.52 Kg

### Operating Specifications

#### Power & Acoustic Sound

- Voltage Input Range: -40 to -72VDC
- Input Current Rating: 2.0A at -48VDC
- Input Current: 1.25A @ -40VDC, 0.75A @ -72VDC
- Maximum In-Rush Current: 20A @ -48VDC, 30A@-72VDC
- Efficiency: 78%
- Power Supply Input Socket: TYCO 206061-1
- Power Cord Input Plug: TYCO 206060-1
- Heat Dissipation: 47W (160.4 BTU/h)
- Power Consumption: 47W (160.4 BTU/h)
- Acoustic Noise (Low FAN Speed): 37 dBA per ISO 7779
- Acoustic Noise (High FAN Speed): 47 dBA per ISO 7779

# Technical Specifications

## Summit X250e-24xDC

### General Specifications

**Performance**

- 48.8 Gbps switch fabric bandwidth
- 36.3 Mpps frame forwarding rate
- 9,216 Byte maximum packet size (Jumbo Frame)
- 128 load sharing trunks, up to 8 members per trunk
- 8 QoS queues/port
- 4,094 VLANs (Port, Protocol, IEEE 802.1Q)
- 1,024 centralized ACL rules per switch

**Forwarding Tables**

- Layer 2/MAC Addresses: 8K
- IPv4 LPM Entries: 512
- IPv6 LPM Entries: 256

**Rate Limiting**

- Ingress bandwidth policing/rate limiting per flow
- Egress bandwidth rate shaping per egress queue and per port
- Rate Limiting Granularity: 64Kbps
- Available Rate Limiters: 1,024 per switch

**Indicators**

- Per port status LED
- System Status LEDs: management, fan and power

**Ports**

- 24 ports 100BASE-X supporting 100BASE-X SFP Optical Transceivers
- 2 ports Gigabit Ethernet (100/1000BASE-X SFP, shared PHY with 2 10/100/1000BASE-T ports)
- 2 SummitStack stacking interfaces
- 1 port Serial (control port)
- 1 10/100BASE-T out-of-band management port

**External Power Supply Support**

- EPS-150DC with EPS-T2

### Physical Specifications

**Dimensions and Weight**

- Height: 1.73 Inches/4.4 Cm
- Width: 17.35 Inches/44.1 Cm
- Depth: 12.13 Inches/30.8 Cm
- Weight: 9.97 Lbs/ 4.53 Kg

### Operating Specifications

**Power & Acoustic Sound**

- Voltage Input Range: -40 to -72VDC
- Input Current Rating: 2.0A at -48VDC
- Input Current: 1.25A @ -40VDC, 0.75A @ -72VDC
- Maximum In-Rush Current: 20A@-48VDC, 30A@-72VDC
- Efficiency: 83%
- Power Supply Input Socket: TYCO 206061-1
- Power Cord Input Plug: TYCO 206060-1
- Heat Dissipation: 42W (143.3 BTU/h)
- Power Consumption: 47W (160.4 BTU/h)
- Acoustic Noise (Low FAN Speed): 37 dBA per ISO 7779
- Acoustic Noise (High FAN Speed): 47 dBA per ISO 7779

## All Summit X250e Series

### Regulatory/Safety Standards

**North American Safety of ITE**

- UL 60950-1 1st Ed., Listed Device (U.S.)
- CSA 22.2#60950-1-03 1st Ed. (Canada)
- Complies with FCC 21CFR 1040.10 (U.S. Laser Safety)
- CDRH Letter of Approval (U.S. FDA Approval)

**European Safety of ITE**

- EN60950-1:2001+A11
- EN 60825-1+A2:2001 (Lasers Safety)
- TUV-R GS Mark by German Notified Body
- 2006/95/EC Low Voltage Directive

**International Safety of ITE**

- CB Report & Certificate per IEC 60950-1:2001 + National Differences
- AS/NZS 60950-1 (Australia/New Zealand)

### EMI/EMC Standards

**North America EMC for ITE**

- FCC CFR 47 part 15 Class A (U.S.)
- ICES-003 Class A (Canada)

**European EMC Standards**

- EN 55022:2003 Class A
- EN 55024:A2-2003 Class A includes IEC 61000-4-2, 3, 4, 5, 6, 11
- EN 61000-3-2,2006 (Harmonics)
- EN 61000-3-3 1995+A1:2001 (Flicker)
- ETSI EN 300 386 v1.3.3, 2005-04 (EMC Telecommunications)
- 2004/108/EC EMC Directive

**International EMC Certifications**

- CISPR 22: 2005, Class A (International Emissions)
- CISPR 24:A2:2003 Class A (International Immunity)
- IEC/EN 61000-4-2:2001 Electrostatic Discharge, 8kV Contact, 15 kV Air, Criteria A
- EC/EN 61000-4-3:2002 Radiated Immunity 10V/m, Criteria A
- EC/EN 61000-4-4:2004 Transient Burst, 1 kV, Criteria A
- IEC/EN 61000-4-5:2001 Surge, 2 kV L-L, 2 kV L-G, Level 3, Criteria A
- IEC/EN 61000-4-6:2004 Conducted Immunity, 0.15-80 MHz, 10V/m unmod. RMS, Criteria A
- EC/EN 61000-4-11:2004 Power Dips & Interruptions, >30%, 25 periods, Criteria C

**Country Specific**

- VCCI Class A (Japan Emissions)
- ACMA (C-Tick) (Australia Emissions)
- KCC Mark EMC Approval (Korea)

### Telecom Standards

- EN/ETSI 300 386:2001 (EMC Telecommunications)
- EN/ETSI 300 019 (Environmental for Telecommunications)
- MEF9 and MEF14 certified for EPL, EVPL and ELAN
- NEBS Level 3 compliant to portions of GR-1089 Issue 4 & GR-63 Issue 3 as defined in SR3580 with exception to filter requirement

### IEEE 802.3 Media Access Standards

- IEEE 802.3 10BASE-T
- IEEE 802.3u 100BASE-TX
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3z 1000BASE-X

### Environmental Standards

- EN/ETSI 300 019-2-1 v2.1.2 (2000-09) - Class 1.2 Storage
- EN/ETSI 300 019-2-2 v2.1.2 (1999-09) - Class 2.3 Transportation
- EN/ETSI 300 019-2-3 v2.1.2 (2003-04) - Class 3.1e Operational
- EN/ETSI 300 753 (1997-10) – Acoustic Noise
- ASTM D3580 Random Vibration Unpackaged 1.5G

### Operating Specifications

**Temperature**

- Operating Temperature Range: 0° C to 40° C (32° F to 104° F)
- Operating Humidity: 10% to 93% relative humidity, non-condensing
- Operational Shock (Half Sine): 30 m/s2 (3g), 11ms, 60 Shocks
- Operational Random Vibration: 5 – 500 Hz @ 1.5g rms

**Storage & Transportation Conditions (Packaged)**

- Transportation Temperature: -40° C to 70° C (- 40° F to 158° F)
- Storage and Transportation Humidity: 10% to 95% RH, non-condensing
- Packaged Shock (Half Sine): 180 m/s2 (18g), 6ms, 600 shocks
- Packaged Sine Vibration: 5 – 62 Hz @ Velocity 5mm/s, 62 – 500 Hz @ 0.2 G
- Packaged Random Vibration: 5 – 20 Hz @ 1.0 ASD w/-3dB/oct. from 20 – 200 Hz
- 14 drops min on sides & corners @ 42" (<15kg box)

### Warranty

- Ltd. Lifetime with express Advanced Hardware Replacement (for products shipped from Extreme Networks on or after June 29, 2009)
- For warranty details, visit www.extremenetworks.com/go/warranty

# Technical Specifications

## Power Supply Units

### EPS-160/EPS-T

**Dimensions and Weight**

**EPS-160**

- Height: 1.69 Inches/4.3 Cm
- Width: 7.68 Inches/19.5 Cm
- Depth: 7.32 Inches/18.6 Cm
- Weight: 2.90 Lbs/1.32 Kg

**EPS-T**

- Height: 1.73 Inches/4.4 Cm
- Width: 17.32 Inches/44.0 Cm
- Depth: 7.64 Inches/19.4 Cm
- Weight: 3.74 Lbs/1.70 Kg

**Power – EPS-160**

- Voltage Input Range: 90 – 264V
- Nominal Input Ratings: 100 – 240V~, 50 – 60Hz, 10A
- Line Frequency Range: 47 – 63 Hz
- Maximum Input Current: 2A at 115 VAC, 1A at 230 VAC
- Maximum Inrush Current: 30A at 115 VAC, 60A at 230 VAC
- Power Supply Input Socket: IEC 320 C144
- Power Cord Input Plug: IEC 320 C13
- Heat Dissipation: 38.5W (131.4 BTU/h)
- Power Consumption: 178W (607.4 BTU/h)

### EPS-500

**Dimensions and Weight**

**EPS-500**

- Height: 1.73 Inches/4.4 Cm
- Width: 17.4 Inches/44 Cm
- Depth: 7.6 Inches/19.3 Cm
- Weight: 10.8 Lbs/4.9 Kg

**Power**

- Voltage Input Range: 90 – 264V
- Nominal Input Ratings: 100 – 240V~, 50 – 60Hz, 10A
- Line Frequency Range: 47 – 63 Hz
- Maximum Input Current: 5.75A at 115 VAC, 2.80A at 230 VAC
- Maximum Inrush Current: 30A at 115 VAC, 60A at 230 VAC
- Output: -50 VDC, 7.5A max, 375 Watts 12 VDC, 7.5A max, 90 Watts
- Power Supply Input Socket: IEC 320 C14
- Power Cord Input Plug: IEC 320 C13
- Heat Dissipation: 158W (539.1 BTU/h)
- Power Consumption: 659W (2448.6 BTU/h)

### EPS-C/EPS-600LS

**Dimensions and Weight**

**EPS-C**

- Height: 1.73 Inches/4.4 Cm
- Width: 17.32 Inches/44.0 Cm
- Depth: 11.81 Inches/30.0 Cm
- Weight: 7.17 Lbs/3.16 Kg

**EPS-600LS**

- Height: 1.69 Inches/4.3 Cm
- Width: 4.61 Inches/11.7 Cm
- Depth: 11.81 Inches/30.9 Cm
- Weight: 3.74 Lbs/1.70 Kg

**Power – EPS-600LS**

- Voltage Input Range: 90 – 264 V
- Nominal Input Voltage/Hz: 115V~/60Hz & 230V~/50Hz, 10.0A
- Line Frequency Range: 47 – 63 Hz
- Maximum Input Current Rating: 7.0A at 115 VAC, 3.5A at 230 VAC
- Maximum Inrush Current: 30A at 115 VAC, 60A at 230 VAC
- Power Supply Input Socket: IEC 320 C14
- Power Cord Input Plug: IEC 320 C13
- Heat Dissipation: 219W (747.7BTU/h)
- Power Consumption: 801W (2733.1BTU/h)

**External Power Supply Chassis System – EPS-C with three EPS-600LS installed**

- Heat Dissipation: 360W (1228.4BTU/h)
- Power Consumption: 1620W (5,527.7BTU/h)

### EPS-150DC/EPS-T2

**Dimensions and Weight**

**EPS-150DC**

- Height: 1.65 Inches/4.2 cm
- Width: 3.74 Inches/9.5 cm
- Depth: 10.12 Inches/25.7 cm
- Weight: 3.76 Lbs/1.71 Kg

**EPS-T2**

- Height: 1.77 Inches/4.5 cm
- Width: 17.32 Inches/44.0 cm
- Depth: 8.66 Inches/22.0 cm
- Weight: 4.0 Lbs/1.82 Kg

**Power – EPS-600LS**

- Voltage Input Range: -36 to -72VDC, 6.0A
- Input Current Rating: 5.5A @ -36VDC, 2.6A @ -72VDC
- Maximum Inrush Current: 20A@-48VDC, 40A @ -72VDC
- Efficiency: 75% with 100% load at 25° C
- Power Supply Input Socket: TYCO 206061-1
- Power Cord Input Plug: TYCO 206060-1
- Heat Dissipation: 45W (153.5 BTU/h)
- Power Consumption: 195W (665.4 BTU/h)

# Ordering Information

| Part Number | Name | Description |
|---|---|---|
| 15101 | Summit X250e-24t | 24 10/100BASE-TX, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge License, 1 AC PSU, connector for EPS-160 external redundant PSU |
| 15101T | Summit X250e-24t-TAA | U.S. Federal TAA, 24 10/100BASE-TX, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge License, 1 AC PSU, connector for EPS-160 external redundant PSU |
| 15103 | Summit X250e-48t | 48 10/100BASE-TX, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge License, 1 AC PSU, connector for EPS-160 external redundant PSU |
| 15103T | Summit X250e-48t-TAA | U.S. Federal TAA, 48 10/100BASE-TX, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge License, 1 AC PSU, connector for EPS-160 external redundant PSU |
| 15105 | Summit X250e-24p | 24 10/100BASE-TX with PoE, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge License, 1 AC PSU, connector for EPS-500 external redundant PSU |
| 15105T | Summit X250e-24p-TAA | U.S. Federal TAA, 24 10/100BASE-TX with PoE, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge License, 1 AC PSU, connector for EPS-500 external redundant PSU |
| 15107 | Summit X250e-48p | 48 10/100BASE-TX with PoE, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge License, 1 AC PSU, connector for EPS-C external redundant power system chassis (requires EPS-600LS) |
| 15107T | Summit X250e-48p-TAA | U.S. Federal TAA, 48 10/100BASE-TX with PoE, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge license, 1 AC PSU, connector for EPS-C external redundant power system chassis (requires EPS-600LS) |
| 15109 | Summit X250e-24x | 24 100BASE-X SFP, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge License, 1 AC PSU, connector for EPS-160 external redundant PSU |
| 15109T | Summit X250e-24x-TAA | U.S. Federal TAA, 24 100BASE-X SFP, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge License, 1 AC PSU, connector for EPS-160 external redundant PSU |
| 15121 | Summit X250e-24tDC | 24 10/100BASE-TX, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge license, 1 DC PSU, connector for EPS-150DC external redundant PSU |
| 15122 | Summit X250e-48tDC | 48 10/100BASE-TX, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge license, 1 DC PSU, connector for EPS-150DC external redundant PSU |
| 15123 | Summit X250e-24xDC | 24 100BASE-T SFP ports, 2 gigabit combo ports (2 unpopulated gigabit SFP and 10/100/1000BASE-T), 2 SummitStack stacking ports, ExtremeXOS Edge license, 1 DC PSU, connector for EPS-150DC external redundant PSU |
| 15113 | Summit X250e series Advanced Edge License | ExtremeXOS Advanced Edge License, Summit X250e series |
| 10906 | EPS-T[1] | External Power System power tray. Accepts up to two EPS-160 power modules |
| 10907 | EPS-160[1] | External Power System power module for EPS-T, 160 Watts, Power cord ordered separately |
| 10911 | EPS-500 External AC PSU[2] | External Power System 500 Watts, Power cord ordered separately |

[1] Compatible with Summit X250e-24t and Summit X250e-48t
[2] Compatible with Summit X250e-24p

# Ordering Information

| Part Number | Name | Description |
|---|---|---|
| 10912 | EPS-C[3] | External Power Supply Unit. Power cord ordered separately. Accepts up to three EPS-600LS power modules |
| 10913 | EPS-600LS[3] | External Power System Power Module for EPS-C, 600 Watts |
| 10909 | EPS-150DC[4] | External Power System power module for EPS-T, 150 Watts, with cable, DC Input |
| 10910 | EPS-T2[4] | External Power System power tray. Accepts up to two EPS-150DC power modules. Add one EPS-150DC for each redundantly powered system |
| 10051 | SX SFP | 1000BASE-S SFP, 1000BASE-SX, LC Connector |
| 10052 | LX SFP | External Power System 500 Watts, Power cord ordered separately |
| 10053 | ZX SFP | 1000BASE-ZX SFP, Extra Long Distance SMF 70 km/21 dB Budget, LC Connector |
| 10064 | LX100 SFP | 1000BASE-LX100 SFP, Extra Long Distance SMF 100 km/30 dB Budget, LC Connector |
| 10056 | 1000BX SFP BX-D | 1000BASE-BX-D SFP, SMF (1490 nm TX/1310 nm RX Wavelength), LC Connector |
| 10057 | 1000BX SFP BX-U | 1000BASE-BX-U SFP, SMF (1310-nm TX/1490-nm RX Wavelength), LC Connector |
| 10058 | 100BASE-BX SFP BX-D | 100M SFP, 100BASE-BX-D, SMF (1550-nm TX/1310-nm RX wavelength), 100 Mbps bidirectional |
| 10059 | 100BASE-BX SFP BX-U | 100M SFP, 100BASE-BX-U, SMF (1310-nm TX/1550-nm RX wavelength), 100 Mbps bidirectional |
| 10066 | 100BASE-LX10 SFP | 100M SFP, 100LX10 SMF, (1310-nm 10km singlemode transmission) LC connector |
| 10067 | 100BASE-FX SFP | 100M SFP, 100FX MMF, (1310-nm, 2km multimode transmission) LC connector |
| 16106 | Stacking Cable, 0.5M | SummitStack/UniStack™ stacking cable, 0.5M |
| 16107 | Stacking Cable, 1.5M | SummitStack/UniStack stacking cable, 1.5M |
| 16108 | Stacking Cable, 3.0M | SummitStack/UniStack stacking cable, 3.0M |
| 16105 | Stacking Cable, 5.0M | SummitStack Stacking Cable, 5.0M (not supported for UniStack) |

[3] Compatible with Summit X250e-48p
[4] Compatible with Summit X250e-24tDC, Summit X250e-48tDC and Summit X250e-24xDC

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